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OPEN SYSTEMS INTERCONNECTION STAKEHOLDER STUDY

FINAL OVERVIEW REPORT

REVISED

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INTRODUCTION

- IN THIS ANALYSIS 43 ORGANIZATIONS ARE INCLUDED, ALL INTERVIEWED DURING THE PERIOD AUGUST 1, 1985 TO AUGUST 20, 1985.

- ORGANIZATIONS WERE CATEGORIZED BY THE CLIENT INTO THE FOLLOWING GROUPS:

    - "LEADING EDGE COMPETITORS," PRINCIPALLY COMPUTER MANUFACTURERS

    - "INTEGRATORS," PRINCIPALLY PROVIDERS OF HARDWARE/SOFTWARE/COMPONENTS

    - "CONSULTANTS," ORGANIZATIONS IN PRESUMED POSITIONS OF INFLUENCE OR THOUGHT LEADERSHIP

    - "PUBLIC SECTOR" - GOVERNMENTAL ENTITIES

    - "CARRIERS," COMMON CARRIERS, PRINCIPALLY IN THE U.S. IN EUROPE CARRIERS ARE CLASSIFIED AS "PUBLIC SECTOR" FOR PURPOSES OF THIS STUDY.

- AN ADDITIONAL PARTITIONING IS "U.S." VERSUS "EUROPE."

INTRODUCTION - (cont'd)

- IN THE U.S. INTERVIEWS WERE CONDUCTED BY TELEPHONE WITH DURATIONS OF UP TO 2.5 HOURS. OFF-SHORE INTERVIEWS WERE PRIMARILY CONDUCTED "ON-SITE" AT LOCATIONS IN THE U.K., FRANCE AND GERMANY. EUROPEAN INTERVIEWS WERE PARTICULARLY DIFFICULT IN THAT AUGUST IS A EUROPEAN HOLIDAY MONTH CREATING INTENSE LOGISTIC DIFFICULTLY. DESPITE THESE CHALLENGES, IT WAS POSSIBLE TO OBTAIN RESPONSIVE INTERVIEWS WITH KNOWLEDGEABLE PERSONNEL IN APPROPRIATE MANAGEMENT POSITIONS.

- DESPITE INTENSE EFFORT TO OBTAIN INTERVIEWS WITH JAPANESE FIRMS IN JAPAN DIRECTLY AND INDIRECTLY. BY BOTH U.S. AND EUROPEAN INTERVIEWERS, THESE EFFORTS MET WITH REFUSAL BY THE JAPANESE IN ALL CASES SAVE NEC. EFFORTS CONTINUE.

- JAPANESE RESPONSES ARE BY THE AMERICAN SUBSIDIARIES WHO WERE WILLING AND ABLE TO RESPOND IN THE VERY SHORT STUDY TIME FRAME. ACCORDINGLY THEY ARE CLASSIFIED AS U.S. RESPONSES.

STAKEHOLDER RESPONDENTS (U.S.) N=27

- LEADING EDGE COMPETITORS:
  - BURROUGHS
  - DIGITAL EQUIPMENT CORPORATION
  - HEWLETT - PACKARD
  - HITACHI
  - HONEYWELL
  - PRIME
  - SPERRY
  - TANDEM
  - XEROX

- INTEGRATORS, U.S.:
  - ADVANCED COMPUTER CORPORATION
  - BOEING COMPUTER SERVICES
  - CHARLES RIVER DATA SYSTEMS
  - COMTEN (NCR)
  - DYNATECH
  - INTEL
  - INT'L NETWORKING (U-B AND GE)
  - MICOM-INTERLAND
  - NORTHERN TELECOMM
  - RACAL-MILGO

STAKEHOLDER RESPONDENTS (U.S.) N=27

- CONSULTANTS
  - A.D. LITTLE
  - BOLT, BERANEK & NEWMAN
  - BOOZ ALLEN
- PUBLIC SECTOR
  - C.C.I.A.
  - NBS
  - DOD/DDN
- CARRIERS
  - AT&T COMMUNICATIONS
  - BELL ATLANTIC
  - TYMNET

INPUT

STAKEHOLDER RESPONDENTS (OFFSHORE) N=16

- LEADING EDGE
  - BULL
  - ERICSSON
  - ICL
  - NEC
  - OLIVETTI
  - PHILIPS
  - NIXDORF
  - SIEMENS
- INTEGRATORS
  - CISI
  - LDR SYSTEMS
  - LOGICA
- CONSULTANTS
  - ARTHUR ANDERSEN
  - BOOZ-ALLEN
- PUBLIC SECTOR
  - BRITISH TELECOMM
  - CNET (FRENCH PTT)
  - FTZ (GERMAN BUNDESPOST)

REFUSALS

COMPANY	REASON	UNCONDITIONAL
AMDAHL	TIMING	NO
CODEX	POLICY	YES
DATA GENERAL	TOO BUSY	YES
HITACHI (OS)	TIMING	NO
NEC (OS)	TIMING	NO
NEC (U.S.)	TIMING	NO
FUJITSU	TIMING	NO
MA/COM	STRATEGIC	YES
WANG	TIMING	NO

- OF TARGET FIRMS ONLY THREE REFUSED UNCONDITIONALLY.
- RESPONSES ARE POSSIBLE FROM THE BALANCE BUT ARE NOT ASSURED AS OF 8/23/85. SHORT STUDY TIME FRAME A MAJOR CONSTRAINT.

CURRENT STATUS OF OSI

- VIRTUALLY ALL VENDORS CLAIM THAT THEY OFFER OSI COMPATIBLE PRODUCTS AT PRESENT. THE EXCEPTIONS ARE:

  - CISI (FRANCE)
  - LOGICA (BRITAIN)
  - MICOM (U.S.)
  - NEC (JAPAN)
  - RACAL - MILGO (U.S.)

- WE WILL SUBSEQUENTLY DEAL WITH THE NATURE OF THESE OFFERINGS WHICH PRIMARILY RELATE TO LEVELS 1-3 AND WITHIN THOSE LEVELS PRINCIPALLY X.25 AT PRESENT.

- FURTHER, VENDORS CLAIM THAT THEIR PRODUCTS ARE "OSI SENSITIVE." IN THE MAIN RESPONDENTS DO NOT (OR ARE NOT WILLING) TO CITE PRODUCTS/SERVICES THAT THEY CONSIDER MORE SENSITIVE THAN OTHERS.

  - AT THE LARGE VENDORS WITH DIVERSIFIED PRODUCT LINES OSI IS VIEWED AS PERVASIVE.

CURRENT STATUS OF OSI

- AT THE SMALLER VENDORS THE NATURE OF THE STUDY BIASES RESPONSES TOWARDS HIGH SENSITIVITY.

- VENDOR RESPONSES ARE HEAVILY CONDITIONED BY PERSPECTIVE.

• CAUSES OF SENSITIVITY SHOW SOME VARIATION:

  - "HEAVY OVERSEAS SALES"
  - "ALL TOUCHED BY COMMUNICATIONS"
  - " IN MAP BUSINESS"

THESE ARE THE MODAL REASONS CITED FOR OSI SENSITIVITY IN THE U.S. OFFSHORE RESPONSES WERE PRODUCT-SPECIFIC ONLY AND PAROCHIAL.

IMPORTANCE OF OSI

MEAN IMPORTANCE RATINGS

	1985	86/87	88/90
U.S.	3.4	4.1	4.8
OFFSHORE	2.9	3.8	4.3

- RESPONDENTS RATED THE IMPORTANCE OF OSI TO CURRENT (1985) AND FUTURE PRODUCTS/SERVICES AS SHOWN ON A SCALE OF 1 TO 5 WITH 1 = NOT VERY IMPORTANT AND 5 = VERY IMPORTANT.

- MEANS NOT STATISTICALLY SIGNIFICANT AT 80% CONFIDENCE INTERVAL USING STUDENT'S T.

- STANDARD DEVIATIONS ARE WIDE AT PRESENT IN BOTH GROUPS BUT NARROW GREATLY BY 1990. IN ESSENCE, RESPONDENT OPINION ON PRESENT IMPORTANCE IS HIGHLY VARIABLE NOW BUT CONVERGES ON FUTURE HIGH IMPORTANCE.

IMPORTANCE DETAILS

- THREE LEADING EDGE U.S. COMPETITORS RANKED OSI VERY HIGHLY AT PRESENT:

COMPANY	REASON
PRIME	MAJOR AUTOMOTIVE CUSTOMER(S)
H-P	MANUFACTURING BASE
TANDEM	PARTICIPATES TO PROTECT ARCHITECTURE

- EUROPEAN LEADING EDGE RESPONDENTS SUCH AS ICL, PHILIPS AND OLIVETTI CONFERRED ONLY MODERATE TO LOW,OSI IMPORTANCE AT PRESENT, WHILE BULL, NIXDORF AND SIEMENS CONFERRED MODERATE TO HIGH IMPORTANCE.

- LOW RATERS SAW AN ABSENCE OF DEMAND, CITED "COMMITMENT" TO CCITT STANDARDS, PAUCITY OF PRODUCTS AS REASONS FOR LOW IMPORTANCE.

- ONLY CARRIERS (INCLUDING BT AND CNET) WERE CONSISTENTLY LOW RATERS ON IMPORTANCE.

  - U.S. CARRIERS THOUGHT OSI WAS UNIMPORTANT (1) NOW AND WOULD RISE TO MODERATE (3) IMPORTANCE BY 1990.

IMPORTANCE DETAILS - (cont'd)

- OFFSHORE CARRIERS FELT MODERATE IMPORTANCE NOW (2-3) WOULD RISE TO 4-5 BY 1990 AS PRODUCTS AND LICENSING ARRANGEMENTS EMERGED.

- DOES U.S. CARRIER "ISDN COMMITMENT" MEAN "I STILL DON'T KNOW," A COMMON JOKE AT TELCOS? SOME OSI SERVICES SUCH AS FILE TRANSFER WOULD SEEM TO PRESUME THE EXISTENCE OF WIDE-BAND, LOW COST DIGITAL CHANNELS.

- AS A GROUP, CONSULTANTS SEE LITTLE CURRENT DEMAND FOR OSI AND IN THE U.S. HAVE LITTLE KNOWLEDGE OR INTEREST IN THE SUBJECT. THERE IS NO MATERIAL ADVOCACY OF OSI BY RESPONDING U.S. CONSULTANTS. THE REACTIVE NATURE OF THESE CONSULTANTS SHOULD BE KEPT FIRMLY IN MIND.

- IN EUROPE ARTHUR ANDERSEN'S LONDON OFFICE HAS CONSULTED ON AN OSI-BASED SYSTEM FOR BRITAIN'S DHSS USING HONEYWELL AND ICL HARDWARE, A 6 MAN-YEAR EFFORT. THIS WAS THE <u>ONLY</u> CONCRETE CONSULTING ACTIVITY FOUND DESPITE EFFORTS TO RECRUIT ACTIVE CONSULTANTS.

IMPORTANCE DETAILS - (cont'd)

- INTEGRATORS - AS A GROUP - PLACE VERY HIGH IMPORTANCE ON OSI AS WOULD BE EXPECTED GIVEN THE TARGET FIRMS. INTERESTINGLY, NEITHER OF THE INTEGRATORS WITH PRODUCT HAVE SOLD MATERIAL ACCOUNTS AND ONE - CHARLES RIVER - OPENLY STATES THAT SALES HAVE BEEN POOR.

CERTIFICATION ISSUES

- THERE IS UNANIMITY AMONG RESPONDENTS THAT CERTIFICATION WILL BE A PART OF PRODUCT OFFERINGS.

- WHEN ASKED TO RATE THE DIFFICULTY OF CERTIFICATION ON A SCALE OF 1-5 WITH 1 AS EASY AND 5 AS VERY DIFFICULT, U.S. VENDORS THOUGHT THE PROCESS WAS RELATIVELY EASY AT A MEAN RATING OF 2.4. OFFSHORE R'S RATED THE PROCESS AS A 3.3.

- VERY FEW RESPONDENTS THOUGHT CERTIFICATION WOULD BE VERY DIFFICULT. THE 5 RESPONSE WAS FOUND ONLY AMONG THOSE WITHOUT EXPERIENCE, i.e., BBN, PHILIPS AND CISI.

- PERHAPS SIGNIFICANTLY, NBS, BT AND CNET RATED DIFFICULTY A 4. THIS LEADS US TO BELIEVE THAT R'S PLANNING PRODUCT MAY BE SERIOUSLY UNDERESTIMATING THE HEIGHT OF THE CERTIFICATION HURDLE. NBS STATES THAT OVER 400 TESTS ARE REQUIRED FOR AN X.25 DEVICE UNDER CURRENT PROCEDURES.

CERTIFIERS TO BE USED

- OF THE U.S. RESPONDENTS 72% WERE INTENDING TO EMPLOY MULTIPLE METHODS/SOURCES FOR CERTIFICATION.

CERTIFICATION SOURCE	% USING
NBS	35%
ITI	22%
SELF	13%
NCC	8%
BRIDGE	5%
OS, UNSPECIFIED	10%
OTHER	10%

- TOTALS DO NOT ADD 100% DUE TO MULTIPLE MENTIONS.

- OF THE OFFSHORE RESPONDENTS 91% WERE PLANNING TO USE MULTIPLE SOURCES/METHODS FOR CERTIFICATION.

CERTIFICATION SOURCE	% USING
NCC	23%
SELF	18%
CNET	14%
AFNOR	10%
FTZ	14%
OTHER	23%

CERTIFIERS TO BE USED - (cont'd)

- CERTIFICATION APPEARS DIVERSE IN BOTH THE U.S. AND OFFSHORE.

- IT MAY BE NOTABLE THAT NO OFFSHORE VENDOR CONTACTED REVEALED PLANS TO CERTIFY IN THE U.S. WHILE SOME U.S. VENDORS PLAN TO CERTIFY IN THE U.S. AND EUROPE.

- U.S. VENDORS TAKE A PRAGMATIC APPROACH TO VERIFICATION. IN MANY INSTANCES THIS MEANS PRODUCTS PLACED IN A NETWORK OR ON A SHOP FLOOR. ITI MENTIONED AMONG MAP VENDORS IN THIS REGARD.

- NCC RECEIVES OCCASIONAL MENTION AS A "VERIFIER" OFFSHORE.

- CONSENSUS IS THAT VERIFICATION IS NOT FEASIBLE.

TECHNICAL REPUTATION OF CERTIFIERS AND TIMING

- FOR TECHNICAL EXCELLENCE 71% OF RESPONDENTS IN THE U.S. THOUGHT NBS HAD THE BEST REPUTATION WHILE 14% THOUGHT ITI WAS BEST (TANDEM AND DEC) WHILE THE REMAINING 14% CONSIDERED ITI AND NBS EQUAL. FOR A SINGLE U.S. CERTIFICATION NBS APPEARS THE BEST CHOICE.

- EUROPEAN RESPONDENTS WERE UNABLE TO ELECT A "BEST." COULD THIS BE POLITICAL?

- ON THE MATTER OF TIME CRITICALITY WITH RESPECT TO CERTIFICATION, U.S. RESPONDENTS FORECAST INCREASING CRITICALITY (FROM 3.0 TO 4.4) WHILE OFFSHORE R'S EXPECT CONSTANT MODERATE CERTIFICATION TIME CRITICALITY (3.3 AND 3.7).

CUSTOMER DEMAND

- AMONG U.S. RESPONDENTS CUSTOMER DEMAND WAS JUDGED SLIGHTLY HIGHER THAN MODERATE AT 3.6 ON A SCALE OF 1 TO 5. THIS IS CONSISTENT WITH THE RATING OF 3.4 RATING OF OSI IMPORTANCE TO THE CURRENT PRODUCT LINE.

- FOR OFFSHORE RESPONDENTS THE DEMAND RATING WAS 3.3, SOMEWHAT LESS CONSISTENT WITH THE CURRENT IMPORTANCE OF 2.9, BUT NOT A STATISTICALLY SIGNIFICANT DIFFERENCE.

- THE DISTRIBUTIONS OF THESE RATINGS ARE MATERIALLY DIFFERENT.

    - 41% OF U.S. RESPONDENTS RATED CUSTOMER DEMAND A "5." PRINCIPALLY THESE WERE AMONG THE INTEGRATORS BUT DEC AND XEROX ALSO RATED DEMAND AT 5.

    - NO EUROPEAN RESPONDENTS RATED DEMAND A "5" EXCEPT FOR BULL.

CUSTOMER DEMAND - (cont'd)

- THERE IS ALSO AN IMPORTANT DIFFERENCE IN CARRIER PERSPECTIVES. U.S. CARRIERS RATED OSI DEMAND A "1" WHILE EUROPEAN CARRIERS RATED DEMAND A "4." COULD THIS BE A FUNCTION OF X.25 PARTICIPATION IN U.S. AND EUROPE BY THE CARRIERS.

- ONLY ONE U.S. RESPONDENT CLAIMED THAT ANY FORMAL MARKET RESEARCH HAD BEEN CONDUCTED TO GAUGE CUSTOMER DEMAND (XEROX). 65% CLAIMED DEMAND ESTIMATED WAS BASED ON QUESTIONS FROM CUSTOMERS, WHILE 31% STATED ESTIMATES WERE BASED ON "CASUAL CUSTOMER COMMENTS." THERE IS AN APPROPRIATE RELATIONSHIP BETWEEN ESTIMATE BASIS AND RATINGS.

SOURCE OF CUSTOMER INTEREST

TYPE	U.S.	EUROPE
TECH	19%	22%
MIS	14%	13%
SR MIS	28%	26%
SR CORP	17%	30%
OTHER	22%	9%
	100%	100%

- INTEREST PROFILE IS DIFFERENT FOR THE U.S. AND EUROPE. INTEREST AMONG MIDDLE/SR MIS IS HIGHER IN U.S. WHILE CORPORATE MANAGEMENT AND TECHNICAL INTEREST IS HIGHER IN EUROPE.

- HIGH U.S. "OTHER" CONSISTS ABOUT EQUALLY OF "MAP" EUROPE AND "OEM" AMONG INTEGRATORS.

- HIGH SR. CORPORATE INTEREST SEEN AT BURROUGHS, HP, SPERRY AND XEROX AMONG LEADING EDGE IN THE U.S. AND AMONG MOST OFFSHORE RESPONDENTS EXCEPT CONSULTANTS.

BENEFITS EXPECTED BY CUSTOMERS

PROPORTION EXPECTING BENEFIT

BENEFIT	U.S.	EUROPE
FLEXIBILITY	71%	80%
EFFICIENCY	30%	33%
EASE OF USE	80%	56%
ECONOMY	37%	80%
INTERCHANGE	96%	100%
STD. FUNCTIONS	86%	75%

DATA DISPLAY SIMILARITIES OF BENEFITS EXPECTED FROM OSI EXCEPT IN TWO AREAS:

- NETWORK ECONOMY EASE OF USE FOR WHICH THERE IS GREATER EXPECTATION IN THE U.S.

- NETWORK FOR WHICH THERE IS A GREATER EXPECTATION IN EUROPE. MARGINAL COMMENTS INDICATE EXPECTED REDUCTIONS IN DUPLICATE EFFORTS FOR THIS ITEM RATHER THAN DIRECT COST SAVINGS.

BENEFITS EXPECTED BY CUSTOMERS - (cont'd)

- NOTE THAT NOT MANY BELIEVE THAT OSI WILL IMPROVE NETWORK EFFICIENCY IN EITHER GROUP.
- ONLY DATA INTERCHANGE RECEIVES AN ALMOST UNANIMOUS VOTE AS AN EXPECTED BENEFIT.
- SEVERAL VENDORS VOLUNTEERED THAT THE USER WOULD HAVE "GREATER FREEDOM OF CHOICE." IN A MULTI-VENDOR ENVIRONMENT OR VARIANTS ON THIS THEME AMONG EUROPEAN RESPONDENTS.

INPUT

EARLIEST INDUSTRIES

- U.S. RESPONDENTS WERE ESSENTIALLY UNANIMOUS IN STATING THAT MANUFACTURING WOULD BE THE FIRST INDUSTRY. ALMOST HALF CITED GENERAL MOTORS OR MAP SPECIFICALLY IN RESPONSE TO THIS QUERY.

- BEYOND MANUFACTURING THERE WAS ESSENTIALLY NO RESPONSE ON AN INDUSTRY BASIS OTHER THAN THE XEROX CLAIM OF "DEALING WITH MOST MAJOR SIC'S." IN THE U.S.

- OFFSHORE RESPONSE MUCH MORE DIVERSE BUT ALSO BETTER DEVELOPED WITH MOST R'S CITING MULTIPLE INDUSTRIES. THERE IS NO COHERENCE TO ORDER OF DEVELOPMENT HOWEVER.

- CITED WITH EQUAL FREQUENCY WERE FINANCE, GOVERNMENT AND MANUFACTURINIG (GM AGAIN) WITH TRAVEL ALSO MENTIONED.

EARLIEST INDUSTRIES - (cont'd)

- IT IS DIFFICULT TO ESCAPE NOTICING THAT THERE WOULD BE NO PALPABLE INDUSTRY FOCUS IN THE U.S. WITHOUT GM ACTIVITY AND MATERIALLY LESS IN EUROPE.

- NOTEWORTHY IS THAT NO U.S. RESPONDENT MENTIONED THE U.S. GOVERNMENT DESPITE THE PRESENCE OF SPERRY, HONEYWELL AND DEC IN THAT MARKET.

APPLICATIONS

- FOR FIRST WAVE APPLICATIONS IN THE 1985-1986 TIME FRAME U.S. R'S WERE ESSENTIALLY UNANIMOUS IN CITING GM-MAP OR A GENERIC VARIATION SUCH AS "MANUFACTURING SHOP FLOOR." THERE IS NO SECOND PLACE.

- THE EUROPEAN FIRST WAVE WAS MORE DIVERSE AND SOMEWHAT MORE SPARSE. ELECTRONIC MAIL AND FILE TRANSFER WERE CITED MULTIPLY, BUT WITHOUT CONSISTENCY AS TO DATE.

- ELECTRONIC MAIL WAS MOST FREQUENTLY CITED FOR THE SECOND WAVE IN THE U.S., USUALLY AS X-400 WITH DATES VARYING BETWEEN 1987 AND 1990. FURTHER ELABORATIONS OF MAP WERE ALSO CITED. THERE WERE INCIDENTAL MENTIONS OF BANKING (BUT NO SPECIFIC APPLICATION) AS WELL. "OFFICE AUTOMATION" AS A GENERIC CATEGORY MADE A LIMITED SHOWING.

- EUROPEAN R'S DID NOT RESPOND WELL TO THIS "APPLICATIONS VERSUS TIME" PROBE WITH SOME CLAIMING THAT OSI WAS DIFFICULT TO CLASSIFY THIS WAY.

APPLICATIONS - (cont'd)

- OTHER THAN MAP AND E-MAIL, THERE IS A DISTINCT PAUCITY OF APPLICATIONS FOCUS.

- IF R'S ARE CORRECT IN THEIR ESTIMATES E-MAIL WILL OCCUR IN EUROPE BEFORE THE U.S. BESIDES THE OVERWHELMING U.S. MAP RESPONSE NO OTHER MAJOR APPLICATION TRENDS EMERGED IN THIS STUDY.

KEY FACTORS PUSHING OSI

- FOR U.S. INTERVIEWEES THE OVERWHELMING RESPONSE TO ACCELERATING FACTORS IS GENERAL MOTORS. 45% OF RESPONSES MENTION THIS.

- THE ACTION OF IBM EMERGE AS A SECOND (WEAKER, 15-20%) THEME ON THE PRESUMPTION THAT AN OSI "ACCOMODATION" BY IBM WOULD PROPEL THE MARKET FORWARD.

- A THIRD THEME EMERGES AS ACTIONS OF NON-IBM VENDORS ATTEMPTING TO "CONTROL THEIR OWN DESTINIES."

- FOR EUROPEAN RESPONDENTS, THE AGGRESSIVENESS OF ICL IS CITED MULTIPLY. ONE R CLAIMS THAT ICL ACCOUNTS FOR 32% OF U.K. INSTALLED BASE. ICL ITSELF REFUSED TO ANSWER THIS QUESTION. BULL WAS MENTIONED VIS A VIS X.25.

- TRADE PRESS REPORTS WERE ALSO CITED AS AN ACCELRATING FACTOR, OFTEN WITH AN IMPLICATION OF OVER-PROMOTION.

INPUT

KEY FACTORS PUSHING OSI

- THERE IS A NOTABLE ABSENCE IN EUROPEAN DOMESTIC RESPONSES OF MENTIONS OF PTT'S AND STANDARDS BODIES AS PROPELLING FACTORS.

- AMERICANS SEE EUROPEAN GOVERNMENTS AND PTT'S AS AN ACCELERATING FACTOR. SPECIFIC EUROPEAN VENDORS ARE NOT MENTIONED BUT THERE IS A GENERAL PERCEPTION THAT OSI IS "BIG OVERSEAS." EEC GROUP OF 12 RECEIVES MENTIONS.

- IN THE AREA OF COMPONENT SOURCES, EUROPEAN R'S CITED NO NAMES CONCRETELY. THIS IS MAY INDICATE A SOFTWARE ORIENTATION AND FOCUS ON THE HIGHER LAYERS OR IT MAY HAVE ANOTHER IMPLICATION AS WE SHALL SEE.

- THE U.S. COMPONENT PROFILE IS MARKEDLY DIFFERENT WITH NUMEROUS RESPONSES. ONLY INTEL RECEIVES MULTIPLE MENTIONS BUT THE FOLLOWING ARE STATED BY R'S TO BE PROVIDING OSI-RELATED COMPONENTS:

  - NATIONAL SEMI
  - MOTOROLA
  - FAIRCHILD
  - TI

KEY FACTORS PUSHING OSI

- RESPONDENTS DID NOT MAKE CLEAR WHETHER THESE SUPPLIERS WERE PROVIDING GENERAL FORMS OF COMPONENTS OR SPECIFIC OSI COMPONENTS WITH THE EXCEPTION OF INTEL WHICH IS SUPPLYING OSI-SPECIFIC COMPONENTS.

- PRESUMABLY THE ABOVE REFLECTS THE STRONG SHOP FLOOR ORIENTATION IN THE U.S.

ROLE OF GOVERNMENT AND STANDARDS BODIES

- WHEN QUERIED SPECIFICALLY ON THESE ASPECTS R'S SHOWED A TENDENCY TO CONVERGE ON THE PROPELLING INFLUENCE OF EUROPEAN GOVERNMENTS.

    - U.S. RESPONSES TENDED TO BE NON-SPECIFIC CITING EUROPEAN GOVERNMENT AS "PUSHING HARD."
    - OMB WAS CITED AS A U.S. INFLUENCE.
    - EUROPEANS CITED GOVERNMENTS AS A MAJOR USER OF NETWORKS AND THEIR ABILITY TO SET PURCHASING STANDARDS.
    - ALSO CITED IN EUROPE WERE THE PROMOTIONAL ACTIVITIES OF FRENCH AND BRITISH PTT'S

- THE ACCELERATING ROLE OF STANDARDS BODIES IN EUROPE WAS VIEWED AS LESS STRONG THAN THE ROLE OF GOVERNMENTS, "NOT PARTICULARLY SIGNIFICANT" WERE THE WORDS OF ONE RESPONDENT.

- STANDARDS BODIES IN THE U.S. WERE SEEN AS HAVING A MORE POTENT ROLE (IN THE ABSENCE OF GOVERNMENT?)

ROLE OF GOVERNMENT AND STANDARDS BODIES - (cont'd)

- NBS WAS MULTIPLY STATED TO BE A POSITIVE FORCE FOR OSI AND WAS PERCEIVED AS COMPETENT, "HEADED IN RIGHT DIRECTION."

- THERE WAS INCIDENTAL MENTION OF ISO AND CCITT, IEEE AND EIA BY U.S. R'S.

• OF THESE TWO GROUPS EUROPEANS SEE GOVERNMENT AS THE MOST SALIENT DOMESTICALLY WHILE U.S. R'S SEE STANDARDS BODIES AS MORE IMPORTANT, PARTICULARLY NBS.

IMPORTANCE OF VARIOUS POSITIVE INFLUENCES

- IN THE CONTEXT OF THE PRIOR PROBES ON KEY DOMESTIC AND INTERNATIONAL FACTORS, COMPONENTS, GOVERNMENTAL AND STANDARD INFLUENCES, R'S WERE ASKED TO CHARACTERIZE THE MOST IMPORTANT ACCELERATING FACTORS OVERALL.

- IN THE U.S., THIS ONCE AGAIN ELICITED A STRONG GM RESPONSE FROM 40% OF INTERVIEWEES. THIS FOCUSSED ON THE INTEGRATORS BUT WAS ALSO PRESENT AMONG LEADING EDGE FIRMS.

- EUROPEAN RESPONSE WAS MUCH MORE DIVERSE, CITING:

  - GOVERNMENT ACTIONS, PROCUREMENTS
  - PTT PROMOTION AND POLICIES
  - TERTIARILY, THE ACTIONS OF VENDORS

- OTHER THAN GM, THERE WAS LITTLE REFERENCE TO USERS OR DEMAND, DESPITE THE FACT THAT RESPONDENTS TOOK THIS QUERY LINE AS AN OPPORTUNITY TO PROVIDE OTHER MISCELLANEOUS RESPONSES, PARTICULARLY IN THE U.S.

RETARDING DOMESTIC FACTORS

- IN THE U.S. 56% OF RESPONDENTS CITED IBM OR IBM/SNA DOMINANCE AS THE RETARDING FACTORS.

- IBM WAS CHARACTERIZED AS:

  - "A RELUCTANT PARTICIPANT"
  - PRACTICING "TOKENISM"
  - HAVING A "MESSY ARCHITECTURE"
  - "NOT INTERESTED"

- EUROPEAN RESPONSES ALSO REFERENCE IBM DOMESTICALLY BUT THIS IS SOMETIMES LESS DIRECT:

  - "ESTABLISHED PROPRIETARY STANDARDS"
  - "LACK OF COMMITMENT FROM UNNAMED VENDOR"
  - "DOMINANCE OF SNA"
  - "IBM MARKET DOMINANCE"

- EUROPEANS ALSO CITE USER APATHY AND LACK OF SOLID OSI DEFINITIONS AS RETARDING FACTORS.

- SECONDARY U.S. RETARDANTS INCLUDE:

  - COST PER CONNECTION
  - SLOWNESS OF STANDARDS DEVELOPMENT
  - LACK OF COOPERATION/COMMUNICATION BETWEEN VENDORS

RETARDING INTERNATIONAL FACTORS

- EUROPEANS SAW SLOW MOVEMENT OF INTERNATIONAL STANDARDS BODIES AS A PRIME INTERNATIONAL RETARDANT CITING A LACK OF COORDINATION, LACK OF HARMONY AND VARIATIONS IN PTT SERVICES AS SPECIFICS OF THE PROBLEM SET.
- ADDITIONALLY, THERE WAS SOME MENTION OF IBM MARKET DOMINANCE IN AN INTERNATIONAL CONTEXT AND GUARDED REFERENCE TO PROPRIETARY STANDARDS.
- AMONG U.S. RESPONDENTS, THE MOST FREQUENTLY EXPRESSED VIEW WAS SLOW MOVEMENT BY STANDARDS BODIES.
- IBM NOT MENTIONED IN AN INTERNATIONAL CONTEXT BY U.S. R'S.
- HP, DEC AND SPERRY STATE THAT THERE ARE NO INTERNATIONAL RETARDING FACTORS. ABOUT HALF OF U.S. RESPONDENTS FAILED TO RESPOND TO THIS PROBE. COULD THIS BE AN INDICATION OF ACTUAL INTERNATIONAL KNOWLEDGE LEVEL?

MOST IMPORTANT RETARDANTS

- IN THE MAIN IBM'S POSITION/ACTIONS ARE THE PRIME FACTOR SEEN BY RESPONDENTS AS A RETARDANT. THIS VIEW IS PARTICULARLY STRONG IN THE U.S. BUT ALSO IS WIDELY HELD IN EUROPE.

  - "IBM WILL GATE THE PROCESS"
  - "NEED TO PROVIDE BOTH SNA AND OSI PRODUCTS"
  - "INSTALLED CUSTOMER BASE"
  - "IBM DOMINANCE"

- EUROPEANS SEE THE INTER-PTT AND "HARMONISATION" PROBLEMS AS ALSO SIGNIFICANT.

- U.S. RESPONDENTS SEE DEVELOPMENT OF STANDARDS AS A SECONDARY PROBLEM.

- ONE POSSIBLE CONSTRUCTION OF THESE RESPONSES - PARTICULARLY IN THE U.S. - WOULD PLACE GM AND IBM AS OPPOSING FORCES IN THE OSI DOMAIN.

OSI IMPACT ON HARDWARE TYPES

EQUIPMENT TYPE	U.S.	EUROPE
MAINFRAME	2.6	3.5
MINI	3.9	4.0
MICRO	4.0	3.4
MODEM	3.5	1.5
PROTO. CONVT.	4.2	3.8
FRONT END	4.4	4.1
SWITCHES	3.9	2.9
GRAND MEAN	3.8	3.3

- RESPONDENTS WERE ASKED TO EVALUATE WHICH EQUIPMENT TYPES WERE "LEAST LIKELY = 1" AND "MOST LIKELY = 5" TO BE IMPACTED BY OSI.

- ALL RESPONDENTS AGREE THAT COMMUNICATION FRONT-ENDS WILL BE MOST IMPACTED, FOLLOWED BY PROTOCOL CONVERTORS AND MINI-COMPUTERS.

- MARKED DIFFERENCES ARE FOUND FOR MODEMS, MAINFRAMES AND MICROCOMPUTERS, APPARENTLY THE RESULT OF MARKET DIFFERENCES.

- U.S. COMM. RESPONDENTS EXPECT MAJOR(5) IMPACT ON SWITCHES WHILE EUROPEAN TELECOMM R'S EXPECT MINOR IMPACT. THE REASON FOR THIS IS UNKNOWN. THIS WAS THE ONLY SYSTEMATIC VARIATION FOUND BY CLASS OF STAKEHOLDER.

MARKET ASPECTS

- LOSS OF MARKET SHARE BY THE RESPONDENT'S COMPANY IS <u>NOT</u> EXPECTED BY ANY R IN EITHER THE U.S. OR EUROPE AS A RESULT OF OSI.

- INCREASES IN MIXED VENDOR ENVIRONMENTS ARE EXPECTED BY 84% OF U.S. R'S AND 27% OF EUROPEAN R'S. NOTE THE LOW PROPORTION EXPECTING MIXED VENDOR INCREASES IN EUROPE.

- IN GENERAL U.S. RESPONDENTS INDICATE THAT THE MIXED VENDOR INCREASE IS THE ESSENCE OF THEIR OPPORTUNITY. EUROPEANS ARE MORE CIRCUMSPECT BUT THERE IS SOME REFERENCE TO IBM PROPRIETARY NETWORK. EROSION RESULTING FROM OSI.

- THERE IS ALSO A GENERAL BELIEF THAT THE TOTAL MARKET SIZE WOULD INCREASE. THIS VIEW IS HELD BY ALL U.S. RESPONDENTS AND 87% OF EUROPEAN RESPONDENTS. A VARIETY OF OTHER POSITIVES ARE POSITED FOR OSI:

  - HIGHER PROFITS
  - REDUCED USER CONFUSION
  - INCREASED NETWORK TRAFFIC
  - EASIER INTERCONNECTION

MARKET ASPECTS - (cont'd)

- NONE OF THE ABOVE APPEAR TO HAVE BEEN SUBJECTED TO RIGOROUS ANALYSIS. THE VIEWS ADVANCED BY R'S SHOULD BE CLASSIFIED AS PERCEPTIONS OR BELIEFS ON THE PART OF RESPONDENTS.

CRITICAL FACTORS UNDER CONTROL

- THIS QUERY AREA UNEARTHED NO INSIGHTS OF MAGNITUDE. RESPONSES WERE OF THE GENERAL FORM "PRODUCT PLANNING AND DEVELOPMENT" OR A VARIANT THEREOF.

- A GENERAL SENSE EMERGES THAT OSI WILL INCREASE VENDOR'S CONTROL OVER THEIR OWN DESTINIES AMONG THESE R'S. THIS IS SEEN AS A STRONG POSITIVE.

CRITICAL FACTORS NOT UNDER CONTROL

- THERE WERE PRONOUNCED DIFFERENCES BETWEEN U.S. AND EUROPEAN RESPONSES IN THIS AREA.

- THE PREDOMINANT U.S. RESPONSE WAS "ACTIONS OF IBM" OR A VARIANT. (47%)

- SECONDARY U.S. RESPONSES WERE:

  - STANDARDS DEVELOPMENT
  - MARKET DEVELOPMENT RATE

- EUROPEAN RESPONSES FOCUSED ON COMPONENTS AND PTT SERVICES, BOTH IN TERMS OF AVAILABILITY.

  - COMPONENT CONCERN WAS AT THE LOWER LAYERS
  - PTT CONCERN WAS WITH THE AVAILABILITY OF <u>UNIFORM</u> SERVICES FROM THE PTT'S.

- IN ALL CASES THESE CONCERNS CUT ACROSS CATEGORIES, I.E., LEADING EDGE TO CARRIERS.